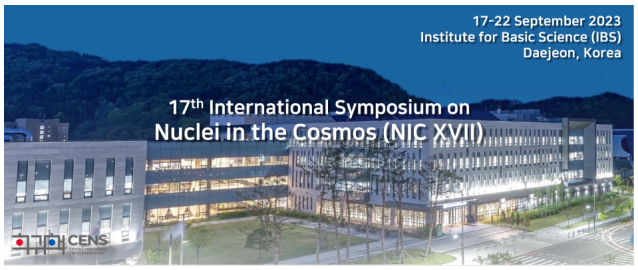

Contribution ID: **5** Type: **Poster**

Extraction of Gamow-Teller Strength Using (d,2He) Reaction in Inverse Kinematics

Tuesday, 19 September 2023 17:45 (5 minutes)

Electron-capture (EC) rates play a key role in core-collapse and thermonuclear supernovae, the crust of accreting neutron stars in binary systems, and the final core evolution of intermediate mass stars. Charge-exchange reactions (CERs) at intermediate energies (~100 MeV) are crucial in extracting information for neutron-rich nuclei as the EC Q-values are positive for such nuclei. The differential cross-sections in CERs at zero momentum transfer are proportional to the Gamow-Teller strength, B(GT), from which the EC rates can be calculated. In a first of a kind experiment, the S800 spectrometer at National Superconducting Cyclotron Laboratory (NSCL) along with Active-Target Time Projection Chamber (AT-TPC) setup was used to run an experiment with (d,^{2}He) probe in inverse kinematics to study unstable nuclei. Data from the experiment for the ^{13}N(d,^{2}He)^{13}C reaction has been analyzed to extract the differential cross-section for ground and excited states to measure the B(GT).

Primary author: RAHMAN, Zarif (Michigan State University)

Co-authors: Dr ZAMORA, Juan (FRIB); Prof. ZEGERS, Remco (Michigan State University/FRIB); Dr GIRAUD, Simon (FRIB)

Presenter: RAHMAN, Zarif (Michigan State University)

Session Classification: Poster session (Nuclear properties for astrophysics)

Track Classification: Nuclear properties for astrophysics